

**What is claimed is:**

1. An online gaming system, comprising:

a communication network;

at least two central servers, each of the at least two servers being coupled to the  
5 network, and

at least one gaming machine coupled to the communication network, each of the at  
least one gaming machine being configured to carry out a game transaction for each game  
played and to commit each game transaction to each of the at least two central servers.

2. The online gaming system according to claim 1, wherein each of the at least  
10 two central servers returns a game transaction commit acknowledgment to the at least one  
gaming machine.

3. The online gaming system according to claim 2, wherein the gaming machine  
acknowledges to a player a validity of the game transaction upon receipt of at least one game  
transaction commit acknowledgment during a predetermined timeout period following the  
15 commit of the game transaction to each of the at least two central servers.

4. The online gaming system according to claim 1, wherein each game  
transaction committed to each of the at least two central servers have an identical inbound  
game payload comprising at least one of a gaming machine ID, a user/player ID, a  
transaction GUID, a gaming machine originating/return address, a game ID, a game bet, and  
20 an amount wagered.

5. The online gaming system according to claim 1, wherein the at least one  
gaming machine is configured to be an active participant in a fault tolerance of the online  
gaming system.

6. The online gaming system according to claim 1, wherein the at least one gaming machine is configured to construct a synchronization log for rebuilding one or a plurality of the at least two central servers upon failure thereof.

7. The online gaming system according to claim 6, wherein the online gaming system is further configured to be rapidly synchronized by using the synchronization log upon returning to its operational state subsequent to failing to communicate with the at least one gaming machine.

8. The online gaming system according to claim 1, wherein the communication network is the Internet and wherein a protocol to transport a payload of each game transaction is UDP.

9. The online gaming system according to claim 1, wherein the at least two central servers and the at least one gaming machine are configured to support instant-draw and deferred-draw of random events.

10. The online gaming system according to claim 1, wherein the at least two central servers are geographically remote from one another.

11. The online gaming system according to claim 1, wherein each of the at least two central servers comprises a trusted transactional cache, the trusted transactional cache being configured to process each committed game transaction, and to provide real time persistent storage and logging of aspects of each committed game transaction.

12. The online gaming system according to claim 1, wherein the at least two central servers further comprise at least one of a trusted transactional cache, a business server and a logistic support server.

13. An online gaming system, comprising:

a communication network;

at least two geographically dispersed central servers, each of the at least two geographically dispersed central servers being coupled to the communication network,

at least two gaming machines, each of the at least two gaming machines being coupled to the communication network and being configured to carry out a game transaction for each game played, the at least two gaming machines being configured to carry out load balancing when committing the game transactions to the at least two geographically dispersed central servers over the communication network.

14. The online gaming system according to claim 13, wherein the load balancing includes having each gaming machine selecting only one of the at least two geographically dispersed central servers to which to commit the game transaction.

15. The online gaming system according to claim 13, wherein the communication network is the Internet and wherein a protocol to transport a payload of each game transaction is UDP.

16. The online gaming system according to claim 13, wherein the at least two central servers and the at least two gaming machines are configured to support instant-draw and deferred-draw of random events.

17. The online gaming system according to claim 13, wherein the at least two geographically dispersed central servers each further comprise a trusted transactional cache, the trusted transactional cache being configured to process each committed game transaction, and to provide real time persistent storage and logging of aspects of each committed game transaction.

18. The online gaming system according to claim 13, wherein the at least two geographically dispersed central servers further comprise at least one of a trusted transactional cache, a business server and a logistic support server.

19. An online gaming system, comprising:

5 a communication network;

a plurality of gaming machines, each of the plurality of gaming machines being configured to carry out game transactions and being coupled to the communication network, and

10 N geographically dispersed central servers, each of the N geographically dispersed central servers being coupled to the communication network, selected ones of the plurality of gaming machines being further configured to perform load balancing when committing transactions to the N geographically dispersed central servers and selected ones of the plurality of gaming machines being configured to commit game transactions to each of the N geographically dispersed central servers.

15 20. The online gaming system according to claim 19, wherein the load balancing includes having each gaming machine select only one of the N geographically dispersed central servers to which to commit the game transaction.

21. The online gaming system according to claim 19, wherein each of the N geographically dispersed central servers is configured to return a game transaction commit acknowledgment to the gaming machine that initiated the transaction commit over the communication network.

20 22. The online gaming system according to claim 21, wherein the gaming machine acknowledges to the player the validity of the game transaction upon receipt of at

least one game transaction commit acknowledgment during a predetermined timeout period following the commit of the game transaction to each of the N geographically dispersed central servers.

23. The online gaming system according to claim 19, wherein each game transaction committed to each of the N geographically dispersed central servers have an identical inbound game payload comprising at least a selected set of the at least one gaming machine ID, the user/player ID, the transaction GUID, the gaming machine originating/return address, the game ID, the game bet, and the amount wagered.

24. The online gaming system according to claim 19, wherein the communication network includes the Internet and wherein a protocol to transport a payload of each of the game transactions is UDP.

25. The online gaming system according to claim 19, wherein the N geographically dispersed central servers and the plurality of gaming machines are configured to support instant-draw and deferred-draw of random events.

26. The online gaming system according to claim 19, wherein the N geographically dispersed central servers each further comprise a trusted transactional cache, the trusted transactional cache being configured to process each committed game transaction, and to provide real time, secure and persistent storage and logging of aspects of each committed game transaction.

27. The online gaming system according to claim 19, each of the N geographically dispersed central servers further comprise at least one of a trusted transactional cache, a business server and a logistic support server.

28. An online gaming system, comprising:

a plurality of gaming machines, each of the plurality of gaming machines being configured to generate and send an inbound transaction packet that includes an inbound transaction payload across at least one of a plurality of communication networks according to one of a plurality of communication protocols;

5           at least one central server coupled to the plurality of communication networks and to each of the at least one central servers, the at least one central server including:

          at least one transaction engine configured to process inbound transaction payloads to generate corresponding outbound transaction payloads;

          a personality front end, the personality front end being configured to interface  
10       with each of the plurality of communication networks to receive inbound transaction packets from the plurality of gaming machines, to extract the inbound transaction payloads from the received inbound transaction packets, to submit the extracted inbound payloads to the at least one transaction engine, to generate outbound transaction packets that include the corresponding outbound transaction payloads and to send the generated outbound transaction  
15       packets to a selected one of the plurality of gaming machines.

29.     The online gaming system according to claim 28, wherein the inbound transaction payload comprises at least one of a gaming machine ID, a user/player ID, a transaction GUID, a terminal originating/return address, a game ID, a game bet, and an amount wagered.

20       30.     The online gaming system according to claim 28, wherein the personality front end is further configured to transcode specific transaction payloads produced by the plurality of gaming terminals into generic transaction payloads.

31. The online gaming system according to claim 28, wherein the plurality of communication networks include at least one of dial-up, X25, Frame Relay, leased line, Internet and VPN.

32. The online gaming system according to claim 28, wherein said one of the plurality of communication protocols is selected from one of proprietary, X25, TCP/IP, UDP, HTTP, XML and SOAP protocols.

33. A game random number generator for supplying random game numbers to a gaming machine, comprising:

at least one hardware number generator configured to provide random number seeds at a predetermined rate, and

at least one pseudo-random number generator coupled to the at least one hardware number generator, the at least one pseudo-random number generator being configured to generate the random game numbers from the random number seeds generated by the at least one hardware number generator.

34. The game random number generator according to claim 33, further comprising a first trusted log configured to securely log all of random number seeds generated by the at least one hardware number generator.

35. The game random number generator according to claim 33, further comprising a second trusted log configured to securely log all of random game numbers generated by the at least one pseudo-random number generator.

36. The game random number generator according to claim 33, wherein the at least one pseudo-random number generator is configured to supply game random numbers on demand for each individual game draw within the gaming machine.

37. The game random number generator according to claim 33, further comprising at least one game result assembler coupled to the at least one pseudo-random number generator, the at least one game result assembler being configured to receive random game numbers produced by the at least one pseudo-random number generator and to generate ranging random game numbers.

38. The game random number generator according to claim 33, wherein the at least one hardware random number generator is one of:

a RNG of Intel 8XX series of PC motherboard chipsets, the chipset being integrated on a motherboard of a computer within the gaming machine;

a RNG of a secure smart card communicating with the computer within the gaming machine;

a RNG of a secure smart device communicating with the computer of the gaming machine;

a RNG of a processor compliant with Microsoft Next-Generation Secure Computing Base, the processor being integrated on the motherboard of the computer of the gaming machine;

a RNG of a motherboard chipset compliant with Microsoft Next-Generation Secure Computing Base, the chipset being integrated on the motherboard of the computer of the gaming machine;

a RNG of a security plug-in device communicating with the computer within the gaming machine, and

a RNG of an add-on card or add-on board security device communicating with the computer within the gaming machine.



39. A gaming system comprising:

at least one gaming machine;

at least one central game server coupled to the at least one gaming machine over a network, the at least one central game server including:

5                   at least one hardware number generator configured to provide random number seeds at a predetermined rate, and

                  at least one pseudo-random number generator coupled to the at least one hardware number generator, the at least one pseudo-random number generator being configured to generate, on demand, the random game numbers from the random number seeds generated by the at least one hardware number generator.

10                   40. The gaming system according to claim 39, further comprising a first trusted log configured to securely log all of random number seeds generated by the at least one hardware number generator.

                  41. The gaming system according to claim 39, further comprising a second trusted log configured to securely log all of random game numbers generated by the at least one pseudo-random number generator.

                  42. The gaming system according to claim 39, wherein the at least one pseudo-random number generator is configured to supply game random numbers on demand for each individual game draw within the gaming machine.

20                   43. The gaming system according to claim 39, further comprising at least one game result assembler coupled to the at least one pseudo-random number generator, the at least one game result assembler being configured to receive random game numbers produced

by the at least one pseudo-random number generator and to generate ranging random game numbers.

44. The gaming system according to claim 39, wherein the at least one hardware random number generator is one of:

5 a RNG of Intel 8XX series of PC motherboard chipsets, the chipset being integrated on a motherboard of a computer within the gaming machine;

a RNG of a secure smart card communicating with the computer within the gaming machine;

10 a RNG of a secure smart device communicating with the computer of the gaming machine;

a RNG of a processor compliant with Microsoft Next-Generation Secure Computing Base, the processor being integrated on the motherboard of the computer of the gaming machine;

15 a RNG of a motherboard chipset compliant with Microsoft Next-Generation Secure Computing Base, the chipset being integrated on the motherboard of the computer of the gaming machine;

a RNG of a security plug-in device communicating with the computer within the gaming machine, and

20 a RNG of an add-on card or add-on board security device communicating with the computer within the gaming machine.

45. A gaming system comprising  
at least one gaming machine, including:

at least one first hardware number generator configured to provide random number seeds at a predetermined rate, and

at least one first pseudo-random number generator coupled to the at least one first hardware number generator, the at least one first pseudo-random number generator being configured to generate, on demand, the random game numbers from the random number seeds generated by the at least one first hardware number generator for each game draw performed at the at least one gaming machine;

at least one central game server coupled to the at least one gaming machine, the central game server including:

at least one second hardware number generator configured to provide random number seeds at a predetermined rate, and

at least one second pseudo-random number generator coupled to the at least one second hardware number generator, the at least one second pseudo-random number generator being configured to generate, on demand, the random game numbers from the random number seeds generated by the at least one second hardware number generator for each game draw performed at the at least one gaming machine.

46. The gaming system according to claim 45, further comprising:

a first trusted log configured to securely log all of random number seeds generated by the at least one first hardware number generator, and

a second trusted log configured to securely log all of random number seeds generated by the at least one second hardware number generator.

47. The gaming system according to claim 45, further comprising:

a third trusted log configured to securely log all of random game numbers generated by the at least one first pseudo-random number generator, and

a fourth trusted log configured to securely log all of random game numbers generated by the at least one second pseudo-random number generator.

5           48.     The gaming system according to claim 45, wherein first and second hardware random number generators are identical.

49.     The gaming system according to claim 45, wherein first and second pseudo random number generators are identical.

10          50.     The gaming system according to claim 45, wherein that at least one gaming machine is configured to select at least one random game number for each game draw from the at least one first pseudo-random number generator or from the second pseudo-random number generator.

51.     A gaming system according to claim 45, further comprising  
at least one game result assembler coupled to the at least one first pseudo-random  
15     number generator or to the at least one second pseudo-random number generator, the at least one game result assembler being configured to receive random game numbers produced by the first or second pseudo-random number generators and to generate ranging random game numbers.

20          52.     The gaming system according to claim 45, wherein the first or second hardware random number generator is one of:

a RNG of Intel 8XX series of PC motherboard chipsets, the chipset being integrated on a motherboard of a computer within the gaming machine;

a RNG of a secure smart card communicating with the computer within the gaming machine;

a RNG of a secure smart device communicating with the computer of the gaming machine;

5 a RNG of a processor compliant with Microsoft Next-Generation Secure Computing Base, the processor being integrated on the motherboard of the computer of the gaming machine;

10 a RNG of a motherboard chipset compliant with Microsoft Next-Generation Secure Computing Base, the chipset being integrated on the motherboard of the computer of the gaming machine;

a RNG of a security plug-in device communicating with the computer within the gaming machine, and

a RNG of an add-on card or add-on board security device communicating with the computer within the gaming machine.

15 53. A gaming machine configured to execute game draws whose outcome depend upon random game numbers, the gaming machine comprising:

at least one hardware number generator configured to provide random number seeds at a predetermined rate, and

20 at least one pseudo-random number generator coupled to the at least one hardware number generator, the at least one pseudo-random number generator being configured to generate the random game numbers from the random number seeds generated by the at least one hardware number generator.

54. The gaming machine according to claim 53, further comprising a first trusted log configured to securely log all of random number seeds generated by the at least one hardware number generator.

55. The gaming machine according to claim 53, further comprising a second trusted log configured to securely log all of random game numbers generated by the at least one pseudo-random number generator.

56. A gaming system comprising:

a communication network;

at least one central web server, each of the at least one central web server being coupled to the network,

at least one central transaction server, each of the at least one central transaction server being coupled to the network and,

at least one web browser based gaming machine coupled to the communication network, each of the at least one web browser based gaming machine comprising:

a standard web browser being configured to display rich page content and animations of the games produced by the at least one central web server, and

a plug-in for the standard web browser, the plug-in being configured to carry out a game transaction for each game played and to commit each game transaction to the at least one central transaction server.

57. A gaming system according to claim 56 wherein the communication network includes the Internet.

58. A gaming system according to claim 56, wherein the plug-in is configured to complete the game transaction upon receipt of a validation transaction from the at least one central transaction server.

59. A gaming system according to claim 56, wherein the committed game transaction includes an inbound game payload comprising at least one of a gaming machine ID, a user/player ID, a transaction GUID, a gaming machine originating/return address, a game ID, a game bet, and an amount wagered.

60. A gaming system according to claim 59 whereby the validation transaction from the at least one central transaction server includes an outbound packet comprising at least one of a gaming machine ID, a user/player ID, a transaction GUID, and an outcome of the game.

61. A gaming system according to claim 56, wherein the plug-in is further configured to commit each game transaction to each of the at least one central transaction servers.

62. An on-line gaming system, comprising:

a communication network;

at least two central servers, each of the at least two central servers being coupled to the communication network;

at least one gaming machine coupled to the communication network, each of the at least one gaming machine being configured to carry out a game transaction for each game played and to commit each game transaction to each of the at least two central servers;

wherein each of the at least two central servers includes a trusted transactional cache, the trusted transactional cache being configured to process each committed game

transaction and wherein each of the at least one gaming machine is configured to actively participate in a continued availability of the gaming system by contributing to a building of a synchronization log such that a failed trusted transaction cache may be synchronized using the synchronization log upon the failed trusted transactional cache returning to an operational state.

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